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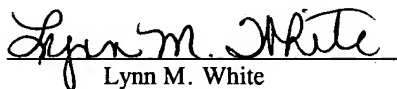
INVENTORS: Rajeev Sharma, Mohammed Yeasin, and Sanshzar Kettebekov  
APPLICATION NO. 10/666,460  
FILED: September 19, 2003  
ATTY. DOCKET NO.: 26,991-A USA

TITLE: PROSODY BASED AUDIO/VISUAL CO-ANALYSIS FOR  
CO-VERBAL GESTURE RECOGNITION

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Information Disclosure Statement  
Pursuant to 37 C.F.R. §§1.56, 1.97 and 1.98

Sir:

Pursuant to Applicants' duty of disclosure set forth in 37 CFR §§1.56, 1.97 and 1.98, the following information is disclosed to aid the Examiner in his or her examination of the application. The inclusion of information in this Disclosure Statement and as set forth on the attached Forms PTO-1449 is not necessarily a concession that such information is prior art to the present invention or that such information is in an art area analogous to the present invention. Copies of the publications listed on the attached Forms PTO-1449 are submitted herewith.

Docket No. 26,991-A USA

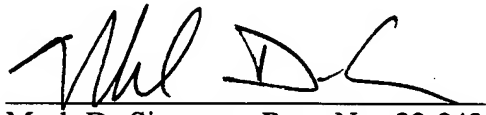
Application No. 10/666,460

It is respectfully requested that the Examiner initial Forms PTO-1449 and return a copy of same upon consideration of these publications.

Since this Information Disclosure Statement is being filed prior to the mailing date of a first Office Action on the merits, no fee or certification is required.

Respectfully submitted,

Date Nov. 16, 2005

A handwritten signature in black ink, appearing to read 'Mark D. Simpson', is written over a horizontal line.

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<b>Form PTO-1449 Modified</b>  <b>List of Patents and Publications Cited by Applicant</b> (Use several sheets if necessary)  <b>U.S. Department of Commerce Patent and Trademark Office</b>		<b>Docket No.</b> 26,991-A USA	<b>Application No.</b> 10/666,460
		<b>Applicant(s)</b> R. Sharma, S. Kettebekov, and M. Yeasin	
		<b>Filing Date</b> 09/19/2003	<b>Group</b> 2121
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	AA	Bolt, "Put-that-there: Voice and gesture at the graphic interface," <i>In SIGGRAPH-Computer Graphics</i> , 1980	
	AB	Lenman et al., "Computer Vision Based Hand Gesture Interfaces for Human-Computer Interaction," KTH (Royal Institute of Technology), Stockholm, Sweden, June, 2002	
	AC	Pavlovic et al., "Visual interpretation of hand gestures for human-computer interaction: A review," <i>IEEE Trans on Pattern Analysis and Machine Intelligence</i> , vol. 19, pp. 677-695, 1997	
	AD	Kettebekov et al., "Toward Natural Gesture/Speech Control of a Large Display," <i>Engineering for Human Computer Interaction</i> , vol. 2254, "Lecture Notes in Computer Science," Little & Nigay, eds., Berlin Heidelberg New York: Springer Verlag, pp. 133-146, 2001	
	AE	Krahnstoever et al., "A Real-Time Framework for Natural Multimodal Interaction with Large Screen Displays," <i>Proc. Intl. Conf. On Multimodal Interfaces</i> , Pittsburgh, USA, pp. 349-354, 2002	
	AF	Sharma et al., "Speech/gesture interface to a visual-computing environment," <i>IEEE Computer Graphics and Applications</i> , vol. 20, pp. 29-37, 2000	
	AG	Rigoll et al., "High Performance Real-Time Gesture Recognition Using Hidden Markov Models," <i>Gesture and Sign Language in Human-Computer Interaction</i> , vol. LNAI 1371, M. Frohlich, ed., pp. 69-80, 1997	
	AH	Wilson et al., "Hidden Markov Models for Modeling and Recognizing Gesture Under Variation," <i>Hidden Markov Models: Applications in Computer Vision.</i> , T. Caelli, ed.: World Scientific, pp. 123-160, 2001	
	AI	Oviatt et al., "Integration and synchronization of input modes during multimodal human-computer interaction," <i>Proc. Conf. On Human Factors in Computing Systems (CHI'97)</i> , pp. 415-422, 1997	
	AJ	Oviatt, S., "Taming Speech Recognition Errors Within a Multimodal Interface," <i>Communications of the ACM</i> , vol. 43(9), pp. 45-51, 2000	
	AK	Sowa et al., "Coverbal iconic gestures for object descriptions in virtual environments: An empirical study," <i>Proc. Conf. On Gestures: Meaning and Use</i> , Porto, Portugal, 1999	
	AL	Sowa et al., "Temporal Symbolic Integration Applied to a Multimodal System Using Gestures and Speech," <i>Gesture-Based Communication in Human-Computer Interaction</i> , vol. LNAI 1739, A.B. E. Al., Ed., Berlin: Springer-Verlag, pp. 291-302, 1999	
<b>Examiner</b>		<b>Date Considered</b>	

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	BA	deCuetos et al., "Audio-visual intent-to-speak detection for human-computer interaction," <i>Proc. ICASSP</i> , Istanbul, Turkey, pp. 1325-1328, 2000	
	BB	Luetin et al., "Continuous Audio-Visual Speech Recognition," <i>Proc. 5<sup>th</sup> European Conf on Computer Vision</i> , 1998	
	BC	Benoit et al., "Audio-Visual and Multimodal Speech Systems," <i>Handbook of Standards and Resources for Spoken Language Systems</i> , D. Gibbon, Ed., 1998	
	BD	Basu et al., "Towards Measuring Human Interactions in Conversational Settings," <i>Proc. IEEE Intl. Workshop on Cues in Communication (CUES 2001)</i> at DVPR 2001, Kauai, Hawaii, 2001	
	BE	Graf et al., "Visual Prosody: Facial Movements Accompanying Speech," <i>Proc. Fifth IEEE Intl. Conf. On Automatic Face and Gesture Recognition (FG'02)</i> , 2002	
	BF	Kettebekov and Sharma, "Understanding gestures in multimodal human computer interaction," <i>Intl. J. On Artificial Intelligence Tools</i> , vol. 9, pp. 205-224, 2000	
	BG	Kita et al., "Movement phases in signs and co-speech gestures, and their transcription by human coders," <i>Proc. Intl. Gesture Workshop</i> , pp. 23-35, 1997	
	BH	Quek et al., "Gesture and speech cues for conversational interaction," submitted to <i>ACM Transactions on Computer-Human Interaction</i> , also as <i>VISLab Report: VISLab-01-01</i> , 2001	
	BI	Azoz et al., "Reliable tracking of human arm dynamics by multiple cue integration and constraint fusion," <i>Proc. IEEE Conf. On Computer Vision and Pattern Recognition</i> , 1998	
	BJ	Boersma, P., "Accurate short-term analysis of the fundamental frequency and the harmonics-to-noise ratio of a sampled sound," <i>Institute of Phonetic Sciences of the University of Amsterdam</i> , vol. 17, pp. 97-110, 1993	
	BK	Beckman, M.E., "The parsing of prosody," <i>Language and Cognitive Processes</i> , vol. 11, pp. 17-67, 1996	
	BL	Taylor, P., "The rise/fall/connection model of intonation," <i>Speech Communication</i> , vol. 15, pp. 169-186, 1994	
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	CA	Yeo et al., "A new family of power transformations to improve normality or symmetry," <i>Biometrika</i> , vol. 87, pp. 954-959, 2000	
	CB	Chickering et al., "A Bayesian approach to learning Bayesian networks with local structure," <i>Proc. 13<sup>th</sup> Conf. On Uncertainty in Artificial Intelligence</i> , Providence, RI, pp. 80-89, 1997	
	CC	Wexelblat, A., "An Approach to Natural Gesture in Virtual Environments," MIT Media Laboratory, pp. 1-17, 1995	
	CD	Sharma et al., "Speech-Gesture Driven Multimodal Interfaces for Crisis Management," submitted to <i>Proc. Of IEEE Special Issue on Multimodal Human-Computer Interface</i> , pp.1-48 (no publication date provided)	
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	CF	Wilson et al., "Realtime Online Adaptive Gesture Recognition," (no publication date provided)	
	CG	Wilson et al., "Parametric Hidden Markov Models for Gesture Recognition," <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , vol. 21, no. 9, pp. 884-900, 1999	
	CH	Kim and Chien, "Analysis of 3D Hand Trajectory Gestures Using Stroke-Based Composite Hidden Markov Models," <i>Applied Intelligence</i> , vol. 15, pp. 131-143, 2001	
	CI	Gullberg, M., "Gesture in Spatial Descriptions," <i>Working Papers</i> , Lund University, Dept. Of Linguistics, vol. 47, pp. 87-97, 1999	
	CJ	McNeill, D., "Gesture and Language Dialectic," <i>Acta Linguistica Hafniensia</i> green, pp. 1-25, 2002	
	CK	Henriques et al., "Geometric computations underlying eye-hand coordination: orientations of the two eyes and the head," <i>Exp. Brain Res.</i> , vol. 152, pp. 70-78, 2003	
	CL	Desmurget et al., "Constrained and Unconstrained Movements Involve Different Control Strategies," <i>Rapid Communication</i> , The American Physiological Society, pp. 1644-1650, 1997	
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	DA	Krauss and Hadar, "The Role of Speech-Related Arm/Hand Gestures in Word Retrieval," pre-editing version of a chapter that appeared in R. Campbell & L. Messing (eds.), <i>Gesture, speech and sign</i> , 93-116, 2001	
	DB	Kingston, J., "Extrapolating from Spoken to Signed Prosody via Laboratory Phonology," <i>Language and Speech</i> , vol. 42 (2-3), pp. 251-281, 1999	
	DC	Wachsmuth, I., "Communicative Rhythm in Gesture and Speech," (no publication date provided)	
	DD	Nakatani, C.H., "The Computational Processing of Intonational Prominence: A Functional Prosody Perspective," thesis presented to the Division of Engineering and Applied Sciences, Harvard University, 1997	
	DE	Wolff et al., "Acting on a visual world: the role of perception in multimodal HCI," (no publication date provided)	
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